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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,179	11/26/2003	Jong Chul Bang	K-0586	6624

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KED & ASSOCIATES, LLP  
P.O. Box 221200  
Chantilly, VA 20153-1200

EXAMINER
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RINEHART, KENNETH

ART UNIT	PAPER NUMBER
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3749

MAIL DATE	DELIVERY MODE
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01/14/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/721,179

Applicant(s)

BANG, JONG CHUL

Examiner

Kenneth B. Rinehart

Art Unit

3749

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6, 7, 9-13, 15, 16, 18, 20, 21, 23-29, 31, 32 and 37-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 7, 9-13, 15, 16, 18, 20, 21, 23-29, 31, 32 and 37-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/5/05, 1/26/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed 12/11/07 have been fully considered but they are not persuasive. Regarding applicant's arguments concerning the amendments of adding multiple crossings and that the individual coils in no way form an alternating pattern, these features have or are rejected under design choice. The applicant argues that such a modification would significantly affect the structural, mechanical, and electrical integrity of Sherril's design. These arguments are not persuasive as the Sherril coil arrays functions in the same manner as the applicant.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6, 7, 9, 20, 37, 38, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherril (5925273) in view of Drews et al (4700495). Sherril discloses independent first and second coil arrays provided in the air passage (col. 3, lines 22-30), the first coil array crosses the plate ... such that a plurality of first coils of the first coil array are ... positioned in the upper and lower passages, and the second coil array crosses the plate ... such that a plurality of second coils of the second coil array are ... positioned in the upper and lower passages, the plurality of first coils of the first coil array are positioned at a predetermined

distance from a corresponding plurality of second coils of the second coil array (fig. 2), the first coil array is symmetrical to the second coil array along a predetermined line of symmetry of the air passage (fig. 2, col. 3, lines 10-12), the plurality of the first coil array are electrically connected as a single unit and the plurality of second coils of the second coil array are electrically connected as a single unit that is separate from the first coil array (fig. 2), the first and second coil arrays each comprise a plurality of coils provided at upper and lower portions of each coil array (fig. 2), the plurality of coils of the first coil array are positioned at a predetermined interval along an air flow direction from the corresponding plurality of coils of the second coil array (fig. 2), the first and second coil arrays are configured to be separately controlled (col. 3, lines 22-30). Sherril discloses applicant's invention substantially as claimed with the exception of alternately, multiple times, multiple times so as to alternately position, the first and second coil arrays are configured to alternately cross the plate so as to form a zigzag pattern, wherein the first coil array comprises a plurality of first coils alternately positioned in the upper and lower passages, and the second coil array comprises a plurality of second coils alternately positioned in the upper and lower passages such that the first and second coils positioned in the upper passage form an alternating pattern, and the first and second coils positioned in the lower passage e form an alternating pattern, A dryer, comprising: a cabinet; a drum provided in the cabinet and configured to be in rotational communication with a motor; and a heater assembly coupled to the drum, comprising: a heater case having an air passage formed therein; a plate positioned in the heater case so as to partition the air passage into an upper passage and a lower passage, the upper and lower portions are positioned along centerlines of the upper and lower passages, respectively, the plate is positioned along the predetermined line of

symmetry of the air passage, and a span of the first coil array overlaps a span of the second coil array, upper and lower portions of each of the first and second coil arrays are positioned along centerlines of the upper and lower passages, each of the plurality of first coils is positioned substantially directly across from a corresponding second coil of the plurality of second coils on the opposite side of the plate, and wherein the upper and lower portions of each of the first and second coil arrays positioned along centerlines of the upper and lower passages respectively, at least one of the plurality of first coils is positioned between two adjacent second coils, and at least one of the plurality of second coils is positioned between two adjacent first coils in each of the upper and lower passages. Drew teaches A dryer, comprising: a cabinet; a drum provided in the cabinet and configured to be in rotational communication with a motor; and a heater assembly coupled to the drum (fig. 2), comprising: a heater case having an air passage formed therein (fig. 3); a plate positioned in the heater case so as to partition the air passage into an upper passage and a lower passage (84, fig. 3), the upper and lower portions positioned along centerlines of the upper and lower passages, respectively (fig. 3), the plate is positioned along the predetermined line of symmetry of the air passage (fig. 3), and a span of the first coil array overlaps a span of the second coil array (Fig. 6, When viewed from the plan view, fig. 6, the spans overlap. The spans occupy a common area.) for the purpose of drying clothes. It would have been obvious to one of ordinary skill in the art to modify Sherril by including A dryer, comprising: a cabinet; a drum provided in the cabinet and configured to be in rotational communication with a motor; and a heater assembly coupled to the drum, comprising: a heater case having an air passage formed therein; a plate configured to partition the air passage into an upper passage and a lower passage, the upper and lower portions positioned along centerlines of

the upper and lower passages, respectively, the plate is positioned along the predetermined line of symmetry of the air passage, and a span of the first coil array overlaps a span of the second coil array as taught by Drews for the purpose of drying clothes so that the marketability of the product is improved. Drews in view of Sherrill discloses applicant's invention substantially as claimed with the exception of multiple times, alternately, multiple times so as to alternately position, upper and lower portions of each of the first and second coil arrays positioned along centerlines of the upper and lower passages, each of the plurality of first coils is positioned substantially directly across from a corresponding second coil of the plurality of second coils on the opposite side of the plate, and wherein the upper and lower portions of each of the first and second coil arrays positioned along centerlines of the upper and lower passages respectively, the first and second coil arrays are configured to alternately cross the plate so as to form a zigzag pattern, wherein the first coil array comprises a plurality of first coils alternately positioned in the upper and lower passages, and the second coil array comprises a plurality of second coils alternately positioned in the upper and lower passages such that the first and second coils positioned in the upper passage form an alternating pattern, and the first and second coils positioned in the lower passage e form an alternating pattern, at least one of the plurality of first coils is positioned between two adjacent second coils, and at least one of the plurality of second coils is positioned between two adjacent first coils in each of the upper and lower passages. At the time the invention was made it would have been an obvious matter of design choice to a person of ordinary skill in the art to have multiple times, alternating, multiple times so as to alternately position, upper and lower portions of each of the first and second coil arrays positioned along centerlines of the upper and lower passages, each of the plurality of first coils is

positioned substantially directly across from a corresponding second coil of the plurality of second coils on the opposite side of the plate, and wherein the upper and lower portions of each of the first and second coil arrays positioned along centerlines of the upper and lower passages respectively, the first and second coil arrays are configured to alternately cross the plate so as to form a zigzag pattern, wherein the first coil array comprises a plurality of first coils alternately positioned in the upper and lower passages, and the second coil array comprises a plurality of second coils alternately positioned in the upper and lower passages such that the first and second coils positioned in the upper passage form an alternating pattern, and the first and second coils positioned in the lower passage e form an alternating pattern, at least one of the plurality of first coils is positioned between two adjacent second coils, and at least one of the plurality of second coils is positioned between two adjacent first coils in each of the upper and lower passages, since shifting the location of parts of a device and duplicating working parts of a device involves only routine skill in the art.

Claims 10-13, 15, 16, 18, 21, 23, 39, 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherrill (5925273). Sherrill discloses a heater case having an air passage formed therein (fig. 1); a plate that partitions the air passage into an upper passage and a lower passage (14, fig. 2); and independent first and second coil arrays provided in the air passage (22a, 22b, fig. 2), a plurality of first coils of the first coil array are positioned at a predetermined distance from a corresponding plurality of second coils of the second coil array (fig. 2), the plurality of the first coil array are electrically connected as a single unit and the plurality of second coils of the second coil array are electrically connected as a single unit that is separate from the first coil array (fig. 2), the first and second coil arrays each comprise a plurality of coils

provided at upper and lower portions of each coil array (fig. 2), the plurality of first coils of the first coil array are positioned at a predetermined interval in an airflow direction from the corresponding plurality of second coils of the second coil array (fig. 2), the first and second coil arrays are configured to be separately controlled (col. 3, lines 22-30), a dryer comprising the heater assembly of claim 10 (col. 2, line 45), the first coil array is symmetrical to the second coil array along a predetermined line of symmetry of the air passage (fig. 2), a heater case (fig. 1); a plate provided in the case and configured to partition the case into an upper portion and a lower portion (14, fig. 2); a first coil array comprising a plurality of upper first coils, the plurality of first coils comprising a plurality of upper first coils positioned in the upper portion of the case, and a plurality of lower first coils positioned in the lower portion of the case (fig. 2); and a second coil array comprising a plurality of second coils, the plurality of second coils comprising a plurality of upper second coils positioned in the upper portion of the case, and a plurality of lower second coils positioned in the lower portion of the case (fig. 2) wherein the first coil array is symmetrical to the second coil array about the plate (fig. 2), wherein the first coil array is configured to operate as a single unit (fig. 2), The second coil array is configured to operate as a single unit independent of the first coil array, (col. 3, lines 22-28), the heater of claim 24 (fig. 2), and a span of the first coil array overlaps a span of the second coil array (When viewed from the right side of figure 2, the spans overlap. The spans occupy a common area), the independent first and second coil arrays each ... cross the plate between the upper and lower passages ... so as to form the ... patterns of first and second coils in the upper and lower passages. . Sherrill discloses applicant's invention substantially as claimed with the exception of and wherein the plurality of first coils are arranged in the first coil array such that



the upper and lower first coils form an alternating pattern, The first coil array is configured to cross the plate each time the first coil array alternates between the upper and lower first coils, the alternating pattern formed by the upper and lower first coils is a mirror image of the alternating pattern formed by the upper and lower second coils, and wherein the plurality of second coils are arranged in the second coil array such that the upper and lower second coils form an alternating pattern, the second coil array is configured to cross the plate each time the second coil array alternates between the upper and lower second coils, the first and second coil arrays each form a zigzag pattern, the first and second coil arrays are configured to alternately cross the plate so as to form a zigzag pattern, the plurality of upper first and second coils form an alternating pattern in the upper portion of the case, and the plurality of lower first and second coils form an alternating pattern in the lower portion of the case, the first and second coil arrays are configured to alternately to cross the plate between the upper and lower passages, the first coil array comprise a plurality of first coils alternately positioned in the upper and lower passages, and the second coil array comprises a plurality of second coils alternately positioned in the upper and lower passages such that the first and second coils positioned in the upper passage form an alternating pattern in the upper passage, and the first and second coils positioned in the lower passage form an alternating pattern in the lower passage, a coil of the first coil array is positioned between each set of adjacent second coils, in the lower passage and a second coil of the second coil array is positioned between each set of adjacent first coils in the upper passage, a coil of the first coil array is positioned between each set of adjacent second coils in the lower passage, and a second coil of the second coil array is positioned between each set of adjacent first coils in the upper passage, each of the plurality of first coils is positioned substantially directly across from a

corresponding second coil of the plurality of second coils on the opposite side of the plate, the plate is positioned along the predetermined line of symmetry of the air passage, upper and lower portions of each coil array positioned along centerlines of the upper and lower passages, respectively, at least one of the plurality of first coils is positioned between two adjacent second coils, and at least one of the plurality of second coils is positioned between two adjacent first coils in each of the upper and lower passages. At the time the invention was made it would have been an obvious matter of design choice to a person of ordinary skill in the art to have a plurality and first and second coils positioned, coil arrays, alternating etc, because applicant has not disclosed that the number or location provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with either the quantity and location of Sherril since shifting the location of parts of a device or changing a quantity involves only routine skill in the art.

Claims 24-29, 31, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherrill (5925273). Sherrill discloses a heater case having an air passage formed therein (fig. 1); a plate provided in the case so as to partition the air passage into an upper passage and a lower passage (14, fig. 2); and independent first and second coil arrays provided in the air passage (22a, 22b, fig. 2), a plurality of first coils of the first coil array are positioned at a predetermined distance from a corresponding plurality of second coils of the second coil array (fig. 2), each of the first and second coil arrays is electrically connected as a single unit (fig. 2), the first and second coil arrays each comprise a plurality of coils provided at upper and lower portions of each coil array (fig. 2), the plurality of first coils of the first coil array are positioned at a

predetermined interval in an airflow direction from the corresponding plurality of second coils of the second coil array (fig. 2), the first and second coil arrays are configured to be separately controlled (col. 3, lines 22-30), the first and second coil arrays are configured to alternately to cross the plate between the upper and lower passages (col. 3, lines 22-30), a dryer comprising the heater assembly of claim 10 (col. 2, line 45), the first coil array is symmetrical to the second coil array along a predetermined line of symmetry of the air passage (fig. 2), a heater case (fig. 1); a plate provided in the case and configured to partition the case into an upper portion and a lower portion (14, fig. 2); a first coil array comprising a plurality of upper first coils, the plurality of first coils comprising a plurality of upper first coils positioned in the upper portion of the case, and a plurality of lower first coils positioned in the lower portion of the case (fig. 2); and a second coil array comprising a plurality of second coils, the plurality of second coils comprising a plurality of upper second coils positioned in the upper portion of the case, and a plurality of lower second coils positioned in the lower portion of the case (fig. 2), wherein the first coil array is symmetrical to the second coil array about the plate (fig. 2), wherein the first coil array is configured to operate as a single unit, (fig. 2), The second coil array is configured to operate as a single unit independent of the first coil array, (col. 3, lines 22-28), the heater of claim 24 (fig. 2), and a span of the first coil array overlaps a span of the second coil array (When viewed from the right side of figure 2, the spans overlap. The spans occupy a common area). Sherrill discloses applicant's invention substantially as claimed with the exception of the plurality of upper first and second coils are arranged in the upper portion such that an upper first coil is disposed between two upper second coils and an upper second coil is disposed between two upper first coils so as to form an alternating pattern of upper first and second coils in the upper portion, and

the plurality of lower first and second coils are arranged in the lower portion such that a lower first coil is disposed between two lower second coils and a lower second coil is disposed between two lower first coils so as to form an alternating pattern of lower first and second coils in the lower portion, and configured to alternately cross the plate between the upper and lower passages, and wherein the plurality of first coils are arranged in the first coil array such that the upper and lower first coils form an alternating pattern, The first coil array crosses the plate each time the first coil array alternates between the upper and lower first coils so as to alternately position first coils in the upper and lower passages, and wherein the plurality of second coils are arranged in the second coil array such that the upper and lower second coils form an alternating pattern, the alternating pattern formed by the upper and lower first coils is a mirror image of the alternating pattern formed by the upper and lower second coils, the second coil array is configured to cross the plate each time the second coil array alternates between the upper and lower second coils, the first and second coil arrays each form a zigzag pattern, the first and second coil arrays are configured to alternately cross the plate so as to form a zigzag pattern, the plurality of upper first and second coils form an alternating pattern in the upper portion of the case, and the plurality of lower first and second coils form an alternating pattern in the lower portion of the case. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the plurality of upper first and second coils are arranged in the upper portion such that an upper first coil is disposed between two upper second coils and an upper second coil is disposed between two upper first coils so as to form an alternating pattern of upper first and second coils in the upper portion, and the plurality of lower first and second coils are arranged in the lower portion such that a lower first coil is disposed between two lower

second coils and a lower second coil is disposed between two lower first coils so as to form an alternating pattern of lower first and second coils in the lower portion, and configured to alternately cross the plate between the upper and lower passages, and wherein the plurality of first coils are arranged in the first coil array such that the upper and lower first coils form an alternating pattern, The first coil array crosses the plate each time the first coil array alternates between the upper and lower first coils so as to alternately position first coils in the upper and lower passages, and wherein the plurality of second coils are arranged in the second coil array such that the upper and lower second coils form an alternating pattern, the alternating pattern formed by the upper and lower first coils is a mirror image of the alternating pattern formed by the upper and lower second coils, the second coil array is configured to cross the plate each time the second coil array alternates between the upper and lower second coils, the first and second coil arrays each form a zigzag pattern, the first and second coil arrays are configured to alternately cross the plate so as to form a zigzag pattern, the plurality of upper first and second coils form an alternating pattern in the upper portion of the case, and the plurality of lower first and second coils form an alternating pattern in the lower portion of the case, since shifting the location of parts of a device involves only routine skill in the art.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth B. Rinehart whose telephone number is 571-272-4881. The examiner can normally be reached on 7:20 -4:20.

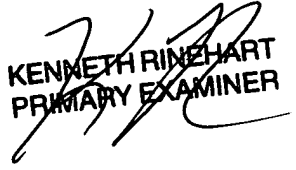
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven McAllister can be reached on 571-272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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KENNETH RINEHART  
PRIMARY EXAMINER